WE CLAIM:

1. A micro-machined chemical-mixing device comprising:

walls of the device forming a chamber having an outlet;

an evaporator adjacent the chamber for evaporating liquid and introducing the evaporated liquid into the chamber;

a liquid feed path for supplying the liquid to the evaporator; and

an initiator for providing initial or sustained energy to react the evaporated liquid thereby causing energy transfer through the outlet.

2. The device of Claim 1, further comprising an inlet for introducing an oxidizer into the chamber for forming a mixture of the evaporated liquid and the oxidizer;

and wherein the initiator provides energy to combust the mixture of the evaporated liquid and the oxidizer, thereby sending a pressure wave through the outlet.

3. The device of Claim 2, wherein the oxidizer is a gas introduced to the chamber through an inlet passing through the walls of the device.

4. The device of Claim 3, wherein the oxidizer is air supplied from outside the device.

5. The device of Claim 2, wherein the oxidizer is evaporated into the chamber by the evaporator and mixed with the evaporated liquid by evaporating liquid oxidizer supplied to the evaporator by the liquid feed path.

6. The device of Claim 1, wherein the device is made of silicon.

7. The device of Claim 1, wherein the evaporator has a membranous pad containing a plurality of holes and grooves to increase surface adhesion and flow of the liquid.

8. The device of Claim 1, further comprising a plurality of laminae and having at least one inlet port and at least one outlet port, wherein a chemical entering the inlet port flows through a plurality of channels which increase surface adhesion of the chemical to the laminae.

9. The device of Claim 1, wherein the evaporator, the chamber and the initiator are formed of thin film based materials.

10. The device of Claim 1, wherein the evaporator, the micro-chamber and the micro-initiator are formed of thin film based quality material, such material being selected according to the operating temperature, and such material being selected from the group comprising silicon based, ceramics and glass materials.

11. The device of Claim 1 wherein the evaporator is located substantially adjacent to and gaseously connected to the chamber to convert liquid phase chemicals into gaseous phase chemicals for introduction into the chamber.

12. The micro device of Claim 2, wherein at least two different liquids are supplied to the evaporator by at least two separate inlets for mixing with the oxidizer.

13. The micro device of Claim 12, wherein the oxidizer is a liquid supplied to the evaporator through a third separate inlet for evaporation into the chamber and for mixing with at least two different evaporated liquids within the chamber.

14. The micro device of Claim 12, wherein the oxidizer is a gas supplied from outside the device and introduced to the chamber through an inlet passing through the walls of the chamber for mixing with at least two different evaporated liquids within the chamber.

15. The micro device of Claim 1, wherein the initiator comprises an array of platinum or other high-temperature performance materials.

16. The micro device of Claim 1, wherein the initiator is comprised of free-standing wires.

17. The micro device of Claim 1, further including temperature sensors for feedback temperature control.

18. The micro device of Claim 1, further including pressure sensors for feedback pressure control.

19. The micro-device of Claim 1 wherein the micro device contains no valves, chemical pumps, pressurized chemical lines or pumps.

20. A method for releasing energy from an outlet of a chamber of a micro-machined chemical-mixing device comprising the steps of:

supplying liquid to an evaporator through a liquid feed path;

evaporating the liquid from the evaporator into the chamber;

providing initial or sustained energy to react the evaporated liquid thereby causing the release of energy from the outlet of the chamber of the micro-machined chemical-mixing device.